Rocky Flats Environmental Technology Site

RECONNAISANCE LEVEL CHARACTERIZATION REPORT (RLCR)/PRE-DEMOLITION SURVEY REPORT (PDSR)

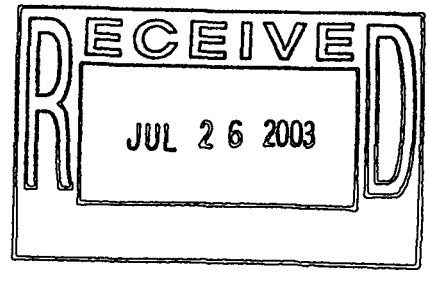
Tent 5 Closure Project

REVISION 0

July 11, 2005

Change Control:

Rev. 1 Revised Section 4.3 – added words "and LLW" – 7/13/05
Rev. 1 Added text in Section 4.3 – 7/14/05
Rev. 1 Removed reference to lead in Section 4 – 7/14/05
Rev. 1 Revised asphalt waste volumes in Section 7 – 7/14/05
Rev. 1 Added text in Section 5 concerning removed piping – 7/14/05
Rev. 1 Added text in Section 8 – 7/14/05
Rev. 1 Added text in Section Attachment E – 7/14/05



CLASSIFICATION REVIEW NOT REQUIRED PER EXEMPTION NUMBER CEX-005-02

ADMIN RECORD

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RECONNAISANCE LEVEL CHARACTERIZATION REPORT (RLCR)/PRE-DEMOLITION SURVEY REPORT (PDSR)

Tent 5 Closure Project

REVISION 0

July 11, 2005

Reviewed by: R. Plappert Date: 7/12/05
Robert Plappert, Quality Assurance

Reviewed by: R. Plappert for D.P. Snyder Date: 7/12/05
D.P. Snyder, RISS ESH&Q Manager

Approved by: A. Clark for T.M. Swartz Date: 7/12/05
Mike Swartz, K-H Project Manager

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ATTACHMENTS

ABBREVIATIONS/ACRONYMS

ACM	Asbestos Containing Material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
$DCGL_{EMC}$	Derived Concentration Guideline Level – elevated measurement comparison
$DCGL_W$	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
HEUN	Highly Enriched Uranyl Nitrate
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSA	Removable Surface Activity
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) and a Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Tent 5. Tent 5 was anticipated to be a Type 2 Facility, and based on the results of the RLC/PDS that was performed, it has been determined to be a Type 2 Facility. Because this Type 2 structure will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Structure surfaces characterized as part of this PDS included the tent fabric and metal structure supports comprising the walls, ceiling, and roof; and two permacons (i.e., east and west permacons) inside the tent. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process, and all results were less than the unrestricted release criteria and are included in this PDSR. Environmental media beneath and surrounding the structure was not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

The PDS encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities*, dated December 2002, Revision 0.

Results indicate that fixed radiological contamination exists in excess of the PDSP unrestricted release limits on the exterior tent fabric only. No beryllium, asbestos or PCB contamination exists in excess of the PDSP unrestricted release limits. Sampling and analysis for RCRA/CERCLA constituents have been conducted as part of the RCRA closure process. The results of this sampling effort demonstrated that the tent structure is not a regulated hazardous waste, and is suitable for disposal at a sanitary landfill. However, the asphalt pad has not undergone RCRA closure and will be managed as hazardous waste (top layer) and sanitary waste (remaining layer). Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Since the permacons had sealed metal floor surfaces, the underside of the metal floor surface and the asphalt pad underneath the metal floor were not accessible for RLC/PDS characterization. Therefore, further characterization of these inaccessible surfaces will be performed during and after demolition of the tent and permacon structures.

Based on the analysis of radiological hazards, Tent 5 is classified as RFCA Type 2 structure pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Tent 5 can be demolished and the tent fabric managed as LLW and the structural support steel (including the permacons and drum crusher) as sanitary waste. The asphalt pad will undergo RCRA closure by means of physical extraction. The top layer of the asphalt pad will be removed and managed as hazardous waste and the remainder of the asphalt pad will be managed as sanitary waste. To ensure the facility remains free of further contamination and PDS data remain valid, Level 2 Isolation Controls have been established with the required postings.

1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) and a Pre-Demolition Survey (PDS) was performed to enable compliant disposition and waste management of Tent 5. Tent 5 was anticipated to be a Type 2 Facility, and based on the results of the RLC/PDS that was performed, it has been determined to be a Type 2 Facility. Because this Type 2 structure will be demolished, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP). Building surfaces characterized as a part of this PDS included the walls, ceiling and roof; and two permacons (i.e., east and west permacons) inside the tent. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process, and all results were less than the unrestricted release criteria and are included in this PDSR. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Environmental media beneath and surrounding the facility was not within the scope of this PDS and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

Tent 5 was an "anticipated" Type 2 RFCA facility prior to the performance of this RLC/PDS effort. A Type 2 RLC had not yet been performed in this building because the tent had been in operation until recently, thus the majority of the tent surfaces were inaccessible for characterization. Since the performance of this RLC/PDS effort was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP), no further characterization of this structure is necessary.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed. Among these is Tent 5. The location of this structure is shown in Attachment A, *Facility Location Map*. This structure no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this Type 2 structure can be demolished, the Data Quality Objectives (DQOs) for a Pre-Demolition Survey (PDS) must be satisfied; this document presents the PDS results for Tent 5. The PDS was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS was built upon physical, chemical and radiological hazards identified in the facility-specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities*, dated December 2002, Revision 0.

1.1 Purpose

The purpose of this report is to communicate and document the results of the Tent 5 PDS effort. A PDS is performed prior to building demolition to define the final radiological and chemical conditions of a facility. Final conditions are compared with the release limits for radiological and non-radiological contaminants. PDS results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

1.2 Scope

This report presents the final radiological and chemical conditions of the Tent 5 structure. Environmental media beneath and surrounding the structure are not within the scope of this PDSR and will be addressed in accordance with the Soil Disturbance Permit process and in compliance with RFCA.

1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this PDS were the same DQOs identified in the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). Refer to section 2.0 of MAN-127-PDSP for these DQOs. The radiological survey Data Quality Objectives (DQOs) for the asphalt pad, structural support steel, drum crusher, and tent fabric were satisfied per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*.

2 HISTORICAL SITE ASSESSMENT

A facility-specific Historical Site Assessment Report (HSAR) was conducted to understand the facility history and related hazards. The assessment consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization packages. Results of the facility specific HSA were documented in a facility specific *Historical Site Assessment Report for the Area 5 - Group 13 Facilities,* dated December 2002, Revision 0. Refer to Attachment B, *Historical Site Assessment Report,* for a copy of the Tent 5 HSAR. In summary, the HSAR identified a low potential for radiological, chemical, beryllium or asbestos hazards.

3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Tent 5 was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the structure surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, structure walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describes the minimum survey requirements (refer to the RISS Characterization Project files for the Tent 5 Radiological Characterization Plan). Two survey unit packages were developed for Tent 5:

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- 750PIN (Tent 5 Permacons Interior Surfaces) - Class 1
- 750PEX (Tent 5 Permacons Exterior Surfaces) – Class 3

The Class 1 designation for survey unit 750PIN was based on the potential for radiological contamination inside the Tent 5 Permacons. The Class 3 designation was chosen for survey unit 750PEX due to the low potential for radiological contamination. The individual radiological survey unit packages are maintained in the RISS Characterization Project files.

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No additional survey units were implemented for this PDSR since all other interior and exterior tent surfaces (i.e., tent fabric, structural support steel, and drum crusher) were surveyed utilizing the RSP 7.02 survey process – refer to RSP 7.02 survey discussions below. The Tent 5 permacon survey unit packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*.

A total of 69 total surface activity (TSA) measurements (59 random, 5 biased and 5 QC) and 64 removable surface activity (RSA) measurements (59 random and 5 biased) were taken and scan surveys performed of the permacons. None of the permacon measurements or scans indicated elevated activity above applicable DCGL values. Since the permacons had sealed metal floor surfaces, the underside of the metal floor surface and the asphalt pad underneath the metal floor were not accessible for RLC/PDS characterization. Therefore, further characterization of these inaccessible surfaces will be performed during and after demolition of the tent and permacon structures.

Fixed transuranic contamination up to 183 dpm/100cm^2 was identified on the exterior fabric panels of Tent 5. Therefore, these fabric panels were surveyed using the Radiological Safety Practices (RSP) 7.02 procedure and forms, and will be managed as LLW during demolition. The RSP 7.02 surveys of the tent fabric are included in Attachment C and were of adequate quality and quantity to safely demolish the tent structure. Since the tent fabric panels were determined to be LLW, the only remaining surfaces of the tent to characterize were the structural support steel. Since these structural support steel surfaces were too difficult to draw a MARSSIM type survey map, the structural support steel was also surveyed using the RSP 7.02 survey process, and were of adequate quality and quantity to safely demolish and dispose of the tent structure.

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The asphalt pad beneath Tent 5 will be released as part of the WRE and RCRA closure process. The RSP 7.02 procedure surveys of the asphalt pad that are included in Attachment C are of adequate quality and quantity to safely demolish the tent structure. The RSP 7.02 survey of the asphalt pad was performed at evenly distributed locations and met PDSP TSA and RSA MDA requirements. Biased scans of stained areas (stained areas encompassed some of the same locations as TSA/RSA locations) and areas along the tent edges were also performed. Additional RSP 7.02 surveys of the asphalt pad areas outside the tent structures will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record DAP-035, dated 6/20/05).

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Attachment C also contains a RSP 7.02 survey of a drum crushing piece of equipment; results of this survey are less than the unrestricted release criteria for sanitary equipment disposal. The drum crusher will be managed as sanitary waste during demolition. Radiological survey data, statistical analysis results, survey locations, and radiological scan maps of the permacons, asphalt pad, structural support steel, drum crusher, and tent fabric WRE surveys are presented in Attachment C, *Radiological Data Summary and Survey Maps*. Level 2 Isolation Control postings are displayed on the tent entrances to ensure no further radioactive materials are introduced.

4 CHEMICAL CHARACTERIZATION AND HAZARDS

Tent 5 was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in the structures. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan was developed during the planning phase that describes sampling requirements and the justification for the sample locations and estimated sample numbers. The contaminants of concern were asbestos, beryllium, RCRA/CERCLA, and PCBs. Refer to Attachment D, *Chemical Summary Data and Sample Maps*, for details on sample results and sample locations. Isolation control postings are displayed on affected structures to ensure no hazardous materials are introduced.

4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Tent 5 as part of PDS activities. A CDPHE-certified asbestos inspector conducted the inspection in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1*. Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector. No materials suspected of containing asbestos were identified therefore, asbestos sampling was not performed as part of this RLC/PDS.

4.2 Beryllium

Based on the HSAR, Interview Checklists, and the Known Beryllium Area list, there was not adequate historical or process knowledge to conclude that beryllium was not present in Tent 5. Consequently, random and biased beryllium sampling was conducted in Tent 5 in accordance with PRO-536-BCPR, Beryllium Characterization Procedure. Biased beryllium sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition. Random sample locations were computer generated.

All PDS beryllium laboratory results from Tent 5 were less than the investigative limit of 0.1 $\mu g/100cm^2$. PDS beryllium laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

4.3 RCRA/CERCLA Constituents [including Metals, Volatile Organic Compounds (VOCs) and Semi Volatile Organic Compounds (SVOCs)]

A Closure Description Document (CDD) was submitted for RCRA Unit 750.1 including Tent 5 (05-RF-00218) and approved by CDPHE on March 23, 2005. The tent structure will be closed as denoted in the CDD. Since the asphalt pad is the RCRA secondary containment for the 750 Pad, and the pad has not yet undergone RCRA closure, the pad will undergo closure once the tent structure has been demolished. Additionally, the two permacons located in Tent 5 were administratively closed and approval of the CDD received from CDPHE on March 8, 2005. The permacons will be administratively closed as stated in the CDD. A closure summary report will be submitted with the Closure Summary Report for 750.1 RCRA Storage Unit.

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Tent 5 may have contained some RCRA regulated items, such as mercury thermostats, fluorescent light bulbs, mercury vapor light bulbs, mercury containing gauges, circuit boards, and lead-acid batteries. However, these items have been removed and are being managed in accordance with the Colorado Hazardous Waste Act.

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The Tent 5 structure will be removed and managed as sanitary waste and LLW. The asphalt pad will undergo proper RCRA closure by means of physical extraction. The layer removed will be managed as hazardous waste and the remainder of the pad will be managed as sanitary waste. All RCRA closure actions will be reported in the Closure Summary Report for the RCRA Unit 750.1.

4.4 Polychlorinated Biphenyls (PCBs)

Based on the HSAR for Tent 5, interviews, facility walk-downs and a review of historical WSRIC processes, the facility did not have a history of PCB use or storage. The structure may have contained PCB fluorescent light ballast, however, all PCB ballast have been removed from the structure. Consequently, PCB sampling and analysis was not conducted as part of this RLC/PDS and will not impact decontamination and decommissioning activities.

5 PHYSICAL HAZARDS

Physical hazards associated with Tent 5 consist of those common to standard industrial environments, and include hazards associated with energized systems, utilities, and trips and falls. There are no other unique hazards associated with the facility. The facility has been relatively well maintained and is in good physical condition, therefore, does not present any hazards associated with building deterioration. However, care should be taken as Tent 5 is located near the following IHSSs, PACs or UBCs:

- PAC – 700-214, *750 Pad Pondcrete and Saltcrete Storage, Unit 25,* Active
- IHSS – 192, *Seep Area Near OU-2 Influent,* NFA 1999

Physical hazards are controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practices. The piping system that was installed in Tent 5 to process pond sludge from the sludge tanks was removed from the tent prior to the start of this RLC/PDS.

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6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Tent 5, and consequent waste management, are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original project DQOs.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- the *number* of samples and surveys;
- the *types* of samples and surveys;
- the sampling/survey process as implemented "in the field"; and
- the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment E.

7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Tent 5 will generate low-level-waste (LLW), sanitary and hazardous waste. The tent fabric will be managed and disposed of as LLW, the metal structure (including the permacons and drum crusher) will be managed and disposed of as sanitary waste, and the asphalt pad will be managed as hazardous waste (top layer) and the remainder of the pad will be managed as sanitary waste (remaining layer). Estimated waste types and waste volumes are presented below. PCB ballast and hazardous waste items have been removed and managed pursuant to Site PCB and waste management procedures.

WASTE TYPES AND VOLUME ESTIMATES

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
Tent 5	0	0	5,000	0	0	0	Tent Fabric –1,000 LLW
Asphalt Pad	0	0	0	0	0	0	Hazardous waste- 4,500 Sanitary waste – 500

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8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological hazards, Tent 5 is classified as a RFCA Type 2 structure pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999). Results indicate that fixed radiological contamination exists in excess of the PDSP unrestricted release limits on the exterior tent fabric only. Tent 5 does not possess any asbestos or beryllium contamination in excess of the PDSP unrestricted release criteria. PCB ballast and hazardous waste items have been removed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations.

The RLC/PDS for Tent 5 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. The asphalt pad beneath the tent was radiologically surveyed in accordance with the Waste Release Evaluation (WRE) process and meets the unrestricted release criteria. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed, after tent demolition is complete, for waste disposal determinations (refer to RFCA Contact Record (DAP-035), dated 6/20/05). Since the permacons had sealed metal floor surfaces, the underside of the metal floor surface and the asphalt pad underneath the metal floor were not accessible for RLC/PDS characterization. Therefore, further characterization of these inaccessible surfaces will be performed during and after demolition of the tent and permacon structures. The drum crushing equipment inside Tent 5 met the RSP 7.02 MDA requirements and is less than the unrestricted release criteria for sanitary equipment disposal. The drum crusher will be managed as sanitary waste during demolition.

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Tent 5 can be demolished and the tent fabric managed as LLW and the structural support steel (including the permacons and drum crusher) as sanitary waste. The asphalt pad will undergo RCRA closure by means of physical extraction. The layer removed will be managed as hazardous waste and the remainder of the pad will be managed as sanitary waste. Environmental media beneath and surrounding the facility will be addressed at a future date in accordance with the Soil Disturbance Permit process and in compliance with RFCA. To ensure Tent 5 remains free of further contamination, Level 2 Isolation Controls have been established with the required postings.

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9 REFERENCES

DOE/RFFO, CDPHE, EPA, 1996. Rocky Flats Cleanup Agreement (RFCA), July 19, 1996.

DOE Order 5400.5, "Radiation Protection of the Public and the Environment."

DOE Order 414.1A, "Quality Assurance."

EPA, 1994. "The Data Quality Objective Process," EPA QA/G-4.

K-H, 1999. Decommissioning Program Plan, June 21, 1999.

MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.

MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.

MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 4, July 15, 2002.

MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.

MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual,* dated August 2000, Revision 1 (NUREG-1575, EPA 402-R-97-016).

PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure,* Rev. 1, May 22, 2001.

PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.

PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.

PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.

PRO-563-ACPR, Asbestos Characterization Procedure, Revision 0, August 24, 1999.

PRO-536-BCPR, Beryllium Characterization Procedure, Revision 0, August 24, 1999.

RFETS, Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition.

RFETS, Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal.

RFETS, RFCA RSOP for Recycling Concrete, September 28, 1999

RFETS, *Historical Site Assessment Report for Area 5-Group 13*, dated December 2002.

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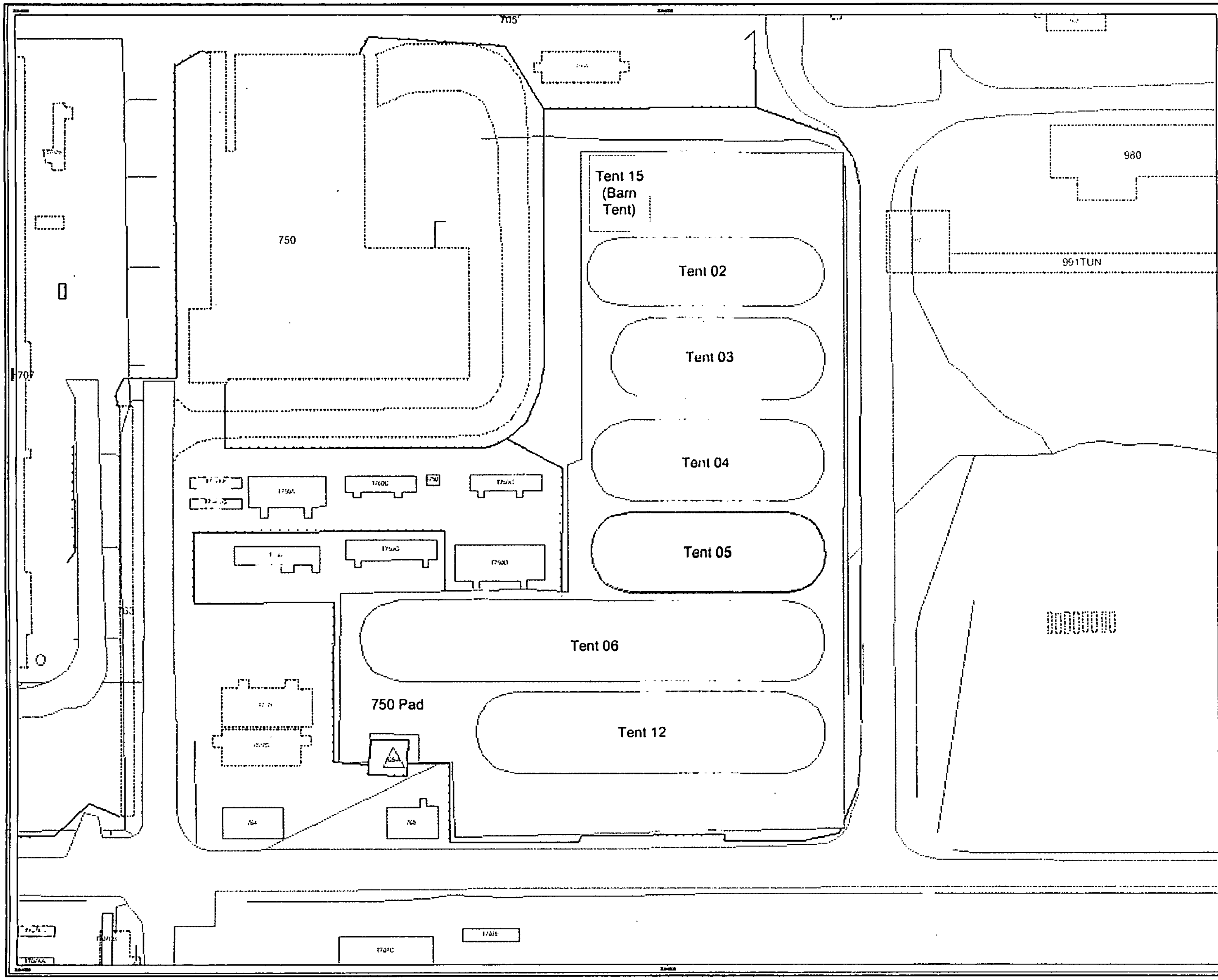
ATTACHMENT A

Facility Location Map



Rocky Flats Environmental Technology Site

Tent 05 Location Map

Standard Map Features

- Demolished Facility
- Lakes and Ponds
- Demolished Roads
- Paved Roads
- Dirt Roads
- Railroad Removed
- Railroad Remaining
- Fence Remaining
- Streams, Ditches, or Other Drainage Features
- Remaining Facility
- Tent 05

N

30 0 30 60 90 120 Feet

State Plane Coordinate Projection
Colorado Central Zone (3476)
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared By: CH2MHILL
GIS DEPT. (303) 966-7707

Prepared For: KAISER-HILL COMPANY

DATE: 6/15/2005

ATTACHMENT B

Historical Site Assessment Report

D&D RISS Facility Characterization
Historical Site Assessment Report
December, 2002 Rev. 0

Facility ID: (AREA 5 - GROUP 13) Buildings S750, 750 Pad, Tent 02, Tent 03, Tent 04, Tent 05, Tent 06, and Tent 12.

Anticipated Facility Type (1, 2, or 3): Buildings S750, 750 Pad, Tent 02, Tent 03, Tent 04, Tent 05, Tent 06, Tent 12, and Tent 15 (Barn Tent) are anticipated Type 2 facilities.

This facility-specific Historical Site Assessment (HSA) has been performed in accordance with:
D&D Characterization Protocol, RFETS MAN-077-DDCP, latest version, and
Facility Disposition Program Manual, RFETS MAN-076-FDPM, latest version

Physical Description

Building S750

Building S750 is a 48 square-foot skid mounted portable shed acquired in the late 1980s or early 1990s. The shed has aluminum siding and an aluminum roof, the floor is wood.

Building S750 has the following utilities: electric.

The 750 Pad and associated tents (Tents 02, 03, 04, 05, 06, and 12)

The 750 Pad is approximately 100, 000 square-foot, fenced and bermed, asphalt pad that was built in 1987. The 750 Pad is estimated to be 4-inches thick and is sloped to control runoff. In 1990 six large tents (Tents 02, 03, 04, 05, 06, and 12) were added to the pad to enclose the Pondcrete and saltcrete waste management activities. In 2002 tent T-750 SPR was constructed to house the sludge stabilization equipment. The tents were constructed with fabric panel stretched across an aluminum frame and used steel anchored pins to mount the tents to the pad. The pad has installed piping for transferring the pond sludge from the storage tents to T750SPR for stabilization activities.

The 750 pad has the following utilities: electric and fire protection is provided by randomly placed fire extinguishers.

Tent 2, 3, 4, 5, 6, 12, and 15

Tents 2, 3, 4, 5, 6, and 12 were constructed in approximately 1990 as a temporary storage facility for the storage and solidification of Pondcrete and Saltcrete. Tent 15 (Barn Tent) was constructed in 2002 to house pond sludge stabilization equipment. These tents are constructed with arched aluminum frames covered with polyester fabric. Tent 2 and 12 have a second layer of fabric to increase durability. The arched frames are anchored to the asphalt pad. Each tent has a containment berm around perimeter of the interior of each tent. Tent 5 houses a Perma-Con unit and a drum crusher.

Each tent is equipped with one or more vehicle access ways, metal access doors and 12-in-diameter wind turbine style ventilators. Tent 5 has a Perma-Con used to sample and repackage waste containers. The dimension of each tent is as follows; Tent 2 - 50 ft. wide by 180 ft. long by 24 ft. high; Tent 3 - 60 ft. wide by 176 ft. long by 24 ft. high; Tent 4 - 60 ft. wide by 180 ft. long by 24 ft. high; Tent 5 - 60 ft. wide by 180 ft. long by 24 ft. high; Tent 6 - 60 ft. wide by 360 ft. long by 24 ft. high; Tent 12 – 60 ft. wide by 280 ft. long by 24 ft. high; and Tent 15 – 60 ft. wide by 80 ft. long by 24 feet high.

Each Tent has the following utilities: electric and fire protection is provided by randomly placed fire extinguishers.

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Historical Operations

Building S750

Building S750 is a shed that was installed in the late 1990s. This shed has primarily been used as a storage shed for non-hazardous and non-radiological operation such as the site housekeeping services, food service organization and site maintenance organization. There is no history of any radiological or Hazardous operations.

The 750 pad and Tents 2, 3, 4, 5, 6, 12, and 15

The 750 pad is a large asphalt-paved area located east of Building 750. The 750 Pad and the associated tents (Tents 2, 3, 4, 5, 6, 12, and 15) are used to store LLW, LLW-Mixed, and hazardous waste. Tents 2 and 12 can be used to store TRU and TRU-Mixed waste. Waste is stored in Tri-wall boxes, plywood crates, corrugated boxes, metal crates, and pond sludge storage tanks. Tent 5 has a Perma-Con used to repackage and samples waste, and a drum crusher. Tent 15 was constructed in 2002 and houses the pond sludge stabilization equipment. A piping system has been installed to move the pond sludge from the tents 3, 4, and 5 to Tent 15 for stabilization. The 750 Pad and the associated tents primarily store Pondcrete, Saltcrete, pond sludge, investigative derived waste and to a lesser extent process generated waste from various operation inside the Protected area. See the 750 Pad WSRIC and Safety Analysis Report for additional information. There have been several small releases to the 750 Pad. Additional release information can be found in IHH, PAC, and UBC section below.

Tent 5 holds the Perma-Con unit used to repackage and sample waste containers and the drum-crushing unit. A second Perma-con is being built in Tent 5 to assist in the waste repackaging and sampling activities. Tent 3, 4, and 6 are primarily used to house Pondcrete storage tanks and Tents 2, 6, and 12 are primarily used to store waste drums and crates.

The 750 pad and associated tents have the following RCRA units:

1) RCRA Unit 750-1, which addresses container storage, and will be closed in accordance with RCRA Part B Permit No. CO 97-05-30-01.

2) RCRA Unit 750.2, which addresses the Pondcrete storage, tanks, and will be closed in accordance with RCRA Part B Permit No. CO-97-05-30-01.

3) RCRA Unit 750.3 that addresses sludge de-watering and stabilization processes. The sludge de-watering equipment has been removed and RCRA Closure is in progress. The stabilization process is still active. Closure will be performed in accordance with RCRA Part B Permit No. CO-97-05-30-01.

Current Operational Status

Buildings S750, the 750 Pad and the associated tents are all operational.

Contaminants of Concern

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Asbestos

Describe any potential, likely, or known sources of Asbestos:

None of the facilities addressed in this HSA have an asbestos posting.

Beryllium (Be)

Describe any potential, likely, or known Be production or storage locations:

The 750 pad and Tents 2, 3, 4, 5, 6, 12 and the Perma-Con in Tent 5 are all on the RFETS list of Historic and Present Beryllium Areas. Tent 15 was constructed in 2002 and has no current Data.

Summarize any recent Be sampling results:

See Industrial Hygiene group has a list of the most recent Be samples collected for the facilities addressed in this HSA.

Lead

Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.):

Based on the age of some of the facilities addressed in this HSA, lead in paint should not be a concern. No processes containing lead were conducted in these facilities.

RCRA/CERCLA Constituents

Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e.g., chemical storage, waste storage, and processes):

Building S750 has no history of Hazardous operations. The 750 Pad and the Associated tents where used to Store LLW, LLW-Mixed, TRU, TRU-Mixed, and hazardous waste streams. See the Historical Operation section above for a more detailer description of the activities which occurred on the 750 Pad. See the 750 Pad WSRIC for a more detailer description of the waste streams handled on the 750 Pad. See the IHSS, PAC, and UBC section below for release information.

Describe any potential, likely, or known spill locations (and sources, if any):

The 750 Pad and the associated tents have had several small releases, some of these releases are documented in PAC 700-214, "750 Pad Pondcrete and Saltcrete Storage, Unit 25".

Describe methods in which spills were mitigated, if any:

Spills were cleaned by sweeping, washing, wiping or scooping.

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PCBs

Describe any potential, likely, or known sources of PCBs (e.g., light ballasts, paints, equipment, etc.):

No PCB containing process where housed in any of the facilities addressed in this HSA. No process equipment containing PCBs were located in any of these facilities. The 750 Pad (and the associated tents) were never used a permitted TSCA waste storage area. Based on the age of construction of some of these facilities, PCBs in paint should not be a concern.

Describe any potential, likely, or known spill locations (and sources, if any):

No PCB spills occurred in any of the Facilities addressed in this HSA.

Describe methods in which spills were mitigated, if any:

No PCB spills occurred in any of the Facilities addressed in this HSA.

Radiological Contaminants

Describe any potential, likely, or known radiological production or storage locations:

The 750 Pad (including Tents 2, 3, 4, 5, 6, 12, and 15), have radiological postings, The 750 Pad, and the associated Tents are permitted LLW, LLWN TRU and TRUM waste storage units. Waste stored on the 750 Pad is primarily Pondcrete, and Saltcrete. See the 750 Pad WSRIC for more information on the waste stored on the 750 Pad. See the Historical Operations section above for a more detailed listing of the operations which occurred in the facilities addressed in this HSA.

Describe any potential, likely, or known spill locations (e.g., known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc.):

The 750 Pad and the associated tents have had several small releases, some of which are documented in the IHSS, PAC, and UBC section below.

Describe methods in which spills were mitigated, f any:

Spills were cleaned by sweeping, washing, wiping or scooping.

Describe any potential, likely, or known isotopes of concern (e.g., weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc.):

Isotopes of concern include uranium and plutonium.

Describe any potential, likely, or known external facility contamination (e.g., stack release points, unfiltered ventilation, facility's physical location to known site releases, etc.):

See section below for information on IHSSs PACs, and UBCs.

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Environmental Restoration Concerns

Describe any ER concerns that could affect facility characterization (e.g., IHSSs, PACs, UBCs):

The 750 Pad and Tents 2, 3, 4, 5, 6, 12, and 15 are located on the following IHSSs, PACs, or UBCs. See individual IHSS, PAC, or UBC report for additional information.

1) PAC - 700-214, "750 Pad Pondcrete and Saltcrete Storage, Unit 25", Active.
2) IHSS – 192 " Seep Area Near OU-2 Influent", NFA, 1999.

Building S750 is not associated with any IHSSs, PACs, or UBCs.

Additional Information

Describe any additional information that may be useful during facility characterization (e.g., contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc.):

None

References

Provide all sources of information utilized to gather data for facility history (e.g., documents, files, interviews):

Sources reviewed to complete this HSA were the RFETS Facility List, the Historical Release Report, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. The WSRIC for those buildings with a WSRIC. In addition, a facility walkdown and interviews were performed.

Waste Volume Estimates and Material Types

Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste (cu ft)
S750	0	50	50	50	0	TBD	N/A
750 Pad	0	0	0	0	0	TBD	Asphalt 50,000
Tent 2	0	0	2,000	0	0	TBD	Fabric- 1,000
Tent 3	0	0	2,000	0	0	TBD	Fabric- 1,000
Tent 4	0	0	2,000	0	0	TBD	Fabric- 1,000
Tent 5	0	0	2,000	0	0	TBD	Fabric- 1,000
Tent 6	0	0	5,000	0	0	TBD	Fabric- 2,000
Tent 12	0	0	3,100	0	0	TBD	Fabric- 1,000
Tent 15	0	0	2,500	0	0	TBD	Fabric- 1,000

Further Actions

Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.):

Begin the RLC/PDS process.

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D&D RISS Facility Characterization
Historical Site Assessment Report
December, 2002 Rev. 0

Note:
This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. SMEs should evaluate and/or verify all information during the RLC/PDS process. SMEs may need to review additional documentation and perform additional interviews. Information contained in this HSA only represents a "snapshot" in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this report will not be amended, and the newer data will take precedence over the data in this report. Newer Data will appear in the RLCR/PDSR.

Prepared By:	Doug Bryant	/s/	December 2002
	Name	Signature	Date

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ATTACHMENT C

Radiological Data Summaries And Survey Maps

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 44 | Nbr Biased Measurements Required: 0 | Nbr QC Required: 3

Nbr Random Measurements Performed: 44 | Nbr Biased Measurements Performed: 0 | Nbr QC Performed: 3

Alpha

Maximum:	54.1 dpm/100cm²
Minimum:	-12.6 dpm/100cm²
Mean:	6.5 dpm/100cm²
Standard Deviation:	13.7
QC Maximum:	20.0 dpm/100cm²
QC Minimum:	10.4 dpm/100cm²
QC Mean:	16.3 dpm/100cm²
Transuranic $DCGL_W$:	100.0 dpm/100cm²
Transuranic $DCGL_{EMC}$:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 44 | Nbr Biased Measurements Required: 0

Nbr Random Measurements Performed: 44 | Nbr Biased Measurements Performed: 0

Alpha

Maximum:	7.3 dpm/100cm²
Minimum:	-1.8 dpm/100cm²
Mean:	0.3 dpm/100cm²
Standard Deviation:	2.0
Transuranic $DCGL_W$:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

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Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
1	511466	06/22/05	Electra	1244	DP-6	12/01/05	0.210	NA	300.0	NA	S
2	510774	06/22/05	Electra	665	DP-6	12/02/05	0.203	NA	300.0	NA	S
3	511466	06/23/05	Electra	1244	DP-6	12/01/05	0.210	NA	300.0	NA	T/S
4	510774	06/23/05	Electra	665	DP-6	12/02/05	0.203	NA	48.0	NA	T/S
5	510643	06/23/05	Electra	1369	DP-6	09/10/05	0.223	NA	48.0	NA	T/S
6	511466	06/24/05	SAC-4	767	NA	08/03/05	0.330	NA	10.0	NA	R
7	511466	06/24/05	SAC-4	1130	NA	07/03/05	0.330	NA	10.0	NA	R
8	510774	06/24/05	Electra	1244	DP-6	12/01/05	0.210	NA	48.0	NA	Q

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Comments Sheet

General Comments: N/A

TSA Comments: For instruments that were used for both TSAs and scans (T/S) on the Instrument Data Sheet, The TSA A-Priori MDA is 48.0 and the scan A-Priori MDA is 300.0.

RSA Comments: N/A

Media Comments: All surfaces in this survey unit were unpainted.

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PINPRP-N001	6	2.7	N/A	N/A
750PINPRP-N002	7	-0.3	N/A	N/A
750PINPRP-N003	6	-0.3	N/A	N/A
750PINPRP-N004	7	-1.8	N/A	N/A
750PINPRP-N005	6	-0.3	N/A	N/A
750PINPRP-N006	7	-1.8	N/A	N/A
750PINPRP-N007	6	1.2	N/A	N/A
750PINPRP-N008	7	-0.3	N/A	N/A
750PINPRP-N009	6	1.2	N/A	N/A
750PINPRP-N010	7	-0.3	N/A	N/A
750PINPRP-N011	6	-0.3	N/A	N/A
750PINPRP-N012	7	-0.3	N/A	N/A
750PINPRP-N013	6	-0.3	N/A	N/A
750PINPRP-N014	7	-0.3	N/A	N/A
750PINPRP-N015	6	-0.3	N/A	N/A
750PINPRP-N016	7	-0.3	N/A	N/A
750PINPRP-N017	6	4.2	N/A	N/A
750PINPRP-N018	7	-1.8	N/A	N/A
750PINPRP-N019	6	-0.3	N/A	N/A
750PINPRP-N020	7	1.2	N/A	N/A
750PINPRP-N021	6	-0.3	N/A	N/A
750PINPRP-N022	7	-1.8	N/A	N/A
750PINPRP-N023	6	1.2	N/A	N/A
750PINPRP-N024	7	-0.3	N/A	N/A
750PINPRP-N025	6	-0.3	N/A	N/A
750PINPRP-N026	7	-1.8	N/A	N/A
750PINPRP-N027	6	5.8	N/A	N/A
750PINPRP-N028	7	1.2	N/A	N/A
750PINPRP-N029	6	-0.3	N/A	N/A

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PINPRP-N030	7	-0.3	N/A	N/A
750PINPRP-N031	6	1.2	N/A	N/A
750PINPRP-N032	7	-0.3	N/A	N/A
750PINPRP-N033	6	2.7	N/A	N/A
750PINPRP-N034	7	-1.8	N/A	N/A
750PINPRP-N035	6	-0.3	N/A	N/A
750PINPRP-N036	7	-1.8	N/A	N/A
750PINPRP-N037	6	-0.3	N/A	N/A
750PINPRP-N038	7	-0.3	N/A	N/A
750PINPRP-N039	6	2.7	N/A	N/A
750PINPRP-N040	7	2.7	N/A	N/A
750PINPRP-N041	6	7.3	N/A	N/A
750PINPRP-N042	7	-1.8	N/A	N/A
750PINPRP-N043	6	-0.3	N/A	N/A
750PINPRP-N044	7	-1.8	N/A	N/A

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

Description: Tent 5 Permacons, Interior

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PINPRP-N001	4	-2.7	N/A	N/A
750PINPRP-N002	4	17.0	N/A	N/A
750PINPRP-N003	4	-6.2	N/A	N/A
750PINPRP-N004	4	-6.2	N/A	N/A
750PINPRP-N005	4	-9.2	N/A	N/A
750PINPRP-N006	4	-12.6	N/A	N/A
750PINPRP-N007	4	-9.2	N/A	N/A
750PINPRP-N008	4	0.7	N/A	N/A
750PINPRP-N009	4	0.7	N/A	N/A
750PINPRP-N010	4	7.1	N/A	N/A
750PINPRP-N011	4	-6.2	N/A	N/A
750PINPRP-N012	4	3.7	N/A	N/A
750PINPRP-N013	3	54.1	N/A	N/A
750PINQRP-N013	8	18.5	N/A	N/A
750PINPRP-N014	5	8.5	N/A	N/A
750PINPRP-N015	4	7.1	N/A	N/A
750PINPRP-N016	5	5.3	N/A	N/A
750PINPRP-N017	5	-3.6	N/A	N/A
750PINPRP-N018	5	8.5	N/A	N/A
750PINPRP-N019	3	19.3	N/A	N/A
750PINPRP-N020	5	50.2	N/A	N/A
750PINQRP-N020	8	20.0	N/A	N/A
750PINPRP-N021	5	-0.5	N/A	N/A
750PINPRP-N022	4	20.4	N/A	N/A
750PINPRP-N023	4	-2.7	N/A	N/A
750PINPRP-N024	4	3.7	N/A	N/A
750PINPRP-N025	4	-2.7	N/A	N/A

Survey Area: 5	Survey Unit: 750PIN	Building: TENT 5

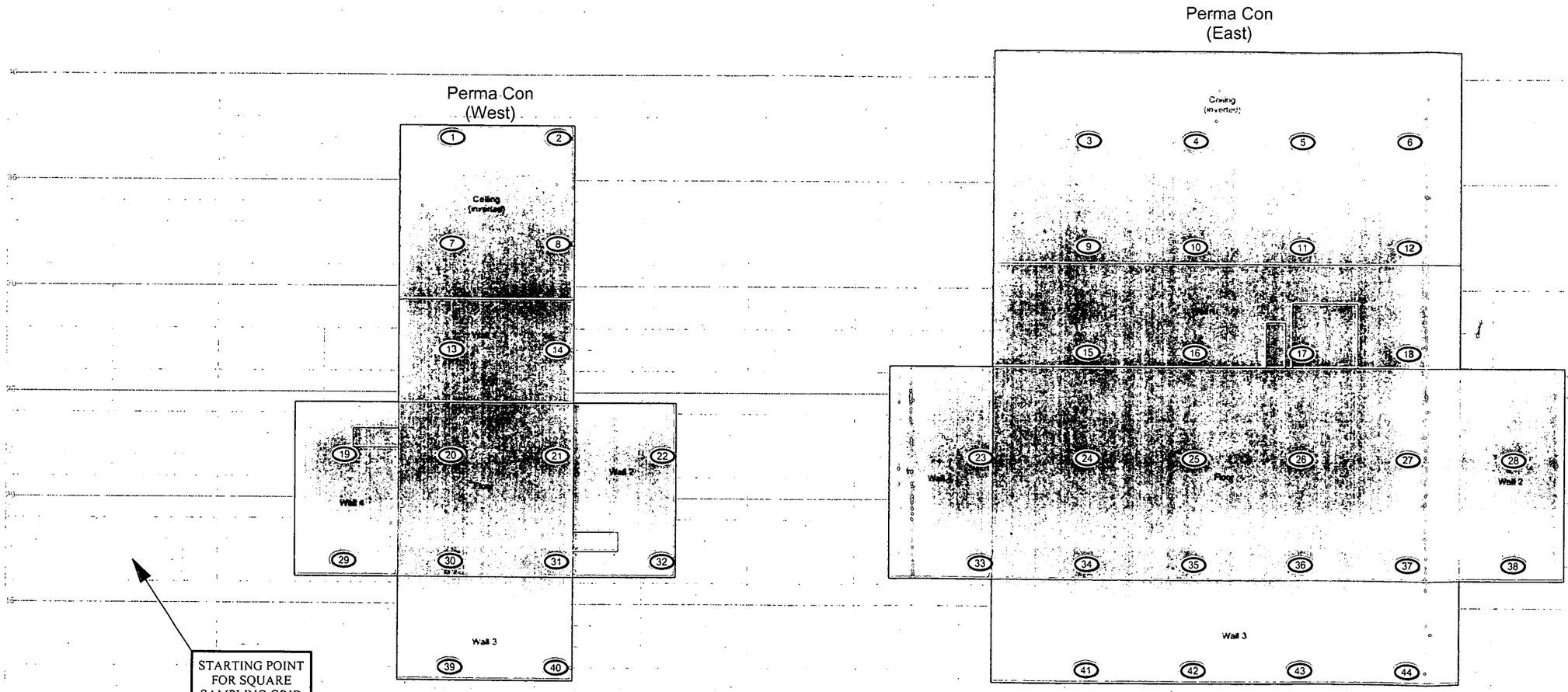
Description: Tent 5 Permacons, Interior

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PINPRP-N026	4	13.5	N/A	N/A
750PINPRP-N027	4	17.0	N/A	N/A
750PINPRP-N028	5	-3.6	N/A	N/A
750PINPRP-N029	3	6.4	N/A	N/A
750PINPRP-N030	5	17.4	N/A	N/A
750PINQRP-N030	8	10.4	N/A	N/A
750PINPRP-N031	5	2.2	N/A	N/A
750PINPRP-N032	4	-2.7	N/A	N/A
750PINPRP-N033	4	23.4	N/A	N/A
750PINPRP-N034	5	2.2	N/A	N/A
750PINPRP-N035	5	-3.6	N/A	N/A
750PINPRP-N036	5	-6.8	N/A	N/A
750PINPRP-N037	5	-0.5	N/A	N/A
750PINPRP-N038	5	5.3	N/A	N/A
750PINPRP-N039	4	13.5	N/A	N/A
750PINPRP-N040	4	0.7	N/A	N/A
750PINPRP-N041	4	23.4	N/A	N/A
750PINPRP-N042	4	10.6	N/A	N/A
750PINPRP-N043	4	10.6	N/A	N/A
750PINPRP-N044	4	13.5	N/A	N/A

RLC/PDS FOR TENT 5

Survey Area: 5 Survey Unit: 750PIN Classification: 1
Building: Tent 5
Survey Unit Description: Tent 5 (Perma-con Interior)
Total Area: 1,050 sq. m. Total Floor Area: 289 sq. m.
Grid Spacing for Survey Points: 5 m. X 5 m.



SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

N

Scan Survey Information
Survey Instrument ID #(s) & RCT ID #(s):
1-5

0 FEET 25
0 METERS 8
1 inch = 18 feet 1 grid sq. = 1 sq. m.

Scan Area

U.S. Department of Energy
Rocky Flats Environmental Technology Site
Prepared by: GIS Dept. 303-966-7707 Prepared for:
CH2MHILL Communications Group
KAISER HILL COMPANY
MAP ID: 03-JS\A5G13\750PIN_SC June 27, 2005

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Rocky Flats Environmental Technology Site
Final Radiological Survey Summary Results

Total Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 5 | Nbr QC Required: 2

Nbr Random Measurements Performed: 15 | Nbr Biased Measurements Performed: 5 | Nbr QC Performed: 2

Alpha

Maximum:	25.9 dpm/100cm²
Minimum:	-5.5 dpm/100cm²
Mean:	10.7 dpm/100cm²
Standard Deviation:	9.7
QC Maximum:	17.9 dpm/100cm²
QC Minimum:	14.8 dpm/100cm²
QC Mean:	16.3 dpm/100cm²
Transuranic DCGL$_W$:	100.0 dpm/100cm²
Transuranic DCGL$_{EMC}$:	300.0 dpm/100cm²

Removable Surface Activity Measurements

Nbr Random Measurements Required: 15 | Nbr Biased Measurements Required: 5

Nbr Random Measurements Performed: 15 | Nbr Biased Measurements Performed: 5

Alpha

Maximum:	2.7 dpm/100cm²
Minimum:	-1.8 dpm/100cm²
Mean:	0.3 dpm/100cm²
Standard Deviation:	1.7
Transuranic DCGL$_W$:	20.0 dpm/100cm²

Media Sample Results

Nbr Random Required: 0 | Nbr Biased Required: 0

Nbr Random Collected: 0 | Nbr Biased Collected: 0

Conclusion - A comparison of the random, biased and QC measurement results against the PDSP Table 7-1 Surface Contamination Guideline limits was conducted; the comparison demonstrates that this survey unit passes the criterion specified in the PDSP.

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Instrument Data Sheet

Inst/RCT Number	RCT ID	Analysis Date	Instr Model	Instru S/N	Probe Type	Calibration Due Dt	Instru Efficiency		A-Priori MDA (dpm/100cm²)		Survey Type
							Alpha	Beta	Alpha	Beta	
1	510774	06/24/05	Electra	1244	DP-6	12/01/05	0.210	NA	48.0	NA	T/S
2	511466	06/24/05	Electra	1369	DP-6	09/10/05	0.223	NA	48.0	NA	T/Q/S
3	510643	06/24/05	Electra	665	DP-6	12/02/05	0.203	NA	48.0	NA	T/S
4	510774	06/24/05	SAC-4	767	NA	08/03/05	0.330	NA	10.0	NA	R
5	510774	06/24/05	SAC-4	1130	NA	07/03/05	0.330	NA	10.0	NA	R

Survey Types: T = Total Surface Activity, Q = TSA QC, S = Scan, R = Removable Surface Activity, I = Investigation

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Comments Sheet

General Comments: N/A

TSA Comments: For instruments that were used for both TSAs and scans (T/S) on the Instrument Data Sheet, The TSA A-Priori MDA is 48.0 and the scan A-Priori MDA is 300.0.

RSA Comments: N/A

Media Comments: N/A

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Random Removable Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PEXPRP-N001	4	-0.3	N/A	N/A
750PEXPRP-N002	5	-1.8	N/A	N/A
750PEXPRP-N003	4	1.2	N/A	N/A
750PEXPRP-N004	5	-1.8	N/A	N/A
750PEXPRP-N005	4	2.7	N/A	N/A
750PEXPRP-N006	5	2.7	N/A	N/A
750PEXPRP-N007	4	1.2	N/A	N/A
750PEXPRP-N008	5	1.2	N/A	N/A
750PEXPRP-N009	4	1.2	N/A	N/A
750PEXPRP-N010	5	-1.8	N/A	N/A
750PEXPRP-N011	4	1.2	N/A	N/A
750PEXPRP-N012	5	-1.8	N/A	N/A
750PEXPRP-N013	4	-0.3	N/A	N/A
750PEXPRP-N014	5	-1.8	N/A	N/A
750PEXPRP-N015	4	-0.3	N/A	N/A

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Biased Removable Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PEXPBP-N016	5	2.7	N/A	N/A
750PEXPBP-N017	4	1.2	N/A	N/A
750PEXPBP-N018	5	-0.3	N/A	N/A
750PEXPBP-N019	4	2.7	N/A	N/A
750PEXPBP-N020	5	-1.8	N/A	N/A

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

Description: Tent 5 Permacons, Exterior

Random/QC Total Surface Activity Data Sheet

Random Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PEXPRP-N001	2	9.8	N/A	N/A
750PEXPRP-N002	1	20.6	N/A	N/A
750PEXQRP-N002	2	14.8	N/A	N/A
750PEXPRP-N003	2	-5.5	N/A	N/A
750PEXPRP-N004	3	11.9	N/A	N/A
750PEXPRP-N005	2	0.8	N/A	N/A
750PEXPRP-N006	1	11.1	N/A	N/A
750PEXPRP-N007	3	2.0	N/A	N/A
750PEXPRP-N008	2	24.6	N/A	N/A
750PEXPRP-N009	1	23.5	N/A	N/A
750PEXQRP-N009	2	17.9	N/A	N/A
750PEXPRP-N010	2	-2.3	N/A	N/A
750PEXPRP-N011	2	-2.3	N/A	N/A
750PEXPRP-N012	1	9.2	N/A	N/A
750PEXPRP-N013	3	11.9	N/A	N/A
750PEXPRP-N014	1	7.7	N/A	N/A
750PEXPRP-N015	2	0.8	N/A	N/A

Survey Area: 5	Survey Unit: 750PEX	Building: TENT 5

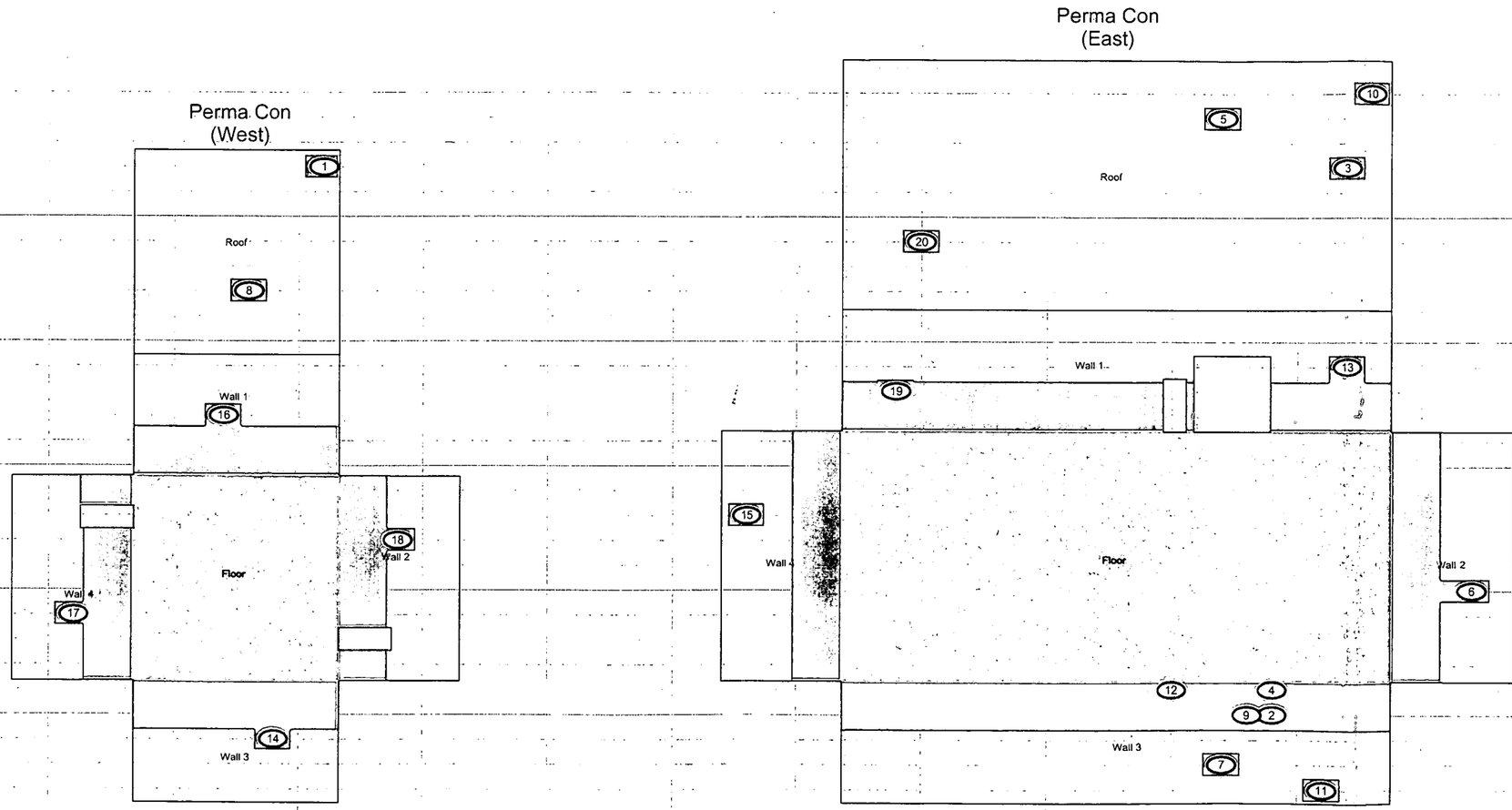
Description: Tent 5 Permacons, Exterior

Biased Total Surface Activity Data Sheet

Biased Measurement Location	Inst / RCT Nbr	Net Alpha (dpm/100cm²)	Net Beta (dpm/100cm²)	
750PEXPBP-N016	3	16.0	N/A	N/A
750PEXPBP-N017	1	21.8	N/A	N/A
750PEXPBP-N018	3	25.9	N/A	N/A
750PEXPBP-N019	1	18.5	N/A	N/A
750PEXPBP-N020	2	7.8	N/A	N/A

RLC/PDS FOR TENT 5

Survey Area: 5 Survey Unit: 750PEX Classification: 3
Building: Tent 5
Survey Unit Description: Tent 5 (Perma-con), Exterior
Total Area: 1,050 sq. m. Total Floor Area: 289 sq. m.



Scan Area

SURVEY MAP LEGEND	Neither the United States Government nor Kaiser Hill Co., nor CH2MHill, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.	N	0 FEET 25 / 0 METERS 8	U.S. Department of Energy Rocky Flats Environmental Technology Site
Smear & TSA Location Smear, TSA & Sample Location Open/Inaccessible Area Area in Another Survey Unit	Scan Survey Information Survey Instrument ID #(s) & RCT ID #(s): 1-3		1 inch = 18 feet 1 grid sq. = 1 sq. m.	Prepared by: GIS Dept. 303-966-7707 Prepared for: CH2MHILL Communications Group KAISER-HILL COMPANY MAP ID: 03-JS\A5G13\750PEX_SC June 27, 2005

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Tech
Model	2929	Model	2929	Model	Electra
Serial#	105885	Serial#	176090	Serial#	1249
Cal Due	9/29/05	Cal Due	11/24/05	Cal Due	12/9/05
Bkg.	0.7cpm	Bkg.	0.1cpm	Bkg.	3.0cpm
Efficiency	37.3%	Efficiency	35.1%	Efficiency	17%
MDA	18dpm	MDA	18dpm	MDA	94dpm

Mfg.	Ludlum	Mfg.	Ludlum	Mfg.	NE Tech
Model	2929	Model	2929	Model	Electra
Serial#	105885	Serial#	176090	Serial#	1249
Cal Due	9/29/05	Cal Due	11/24/05	Cal Due	12/9/05
Bkg.	76.2cpm	Bkg.	65.8cpm	Bkg.	406.0cpm
Efficiency	36.5%	Efficiency	37.4%	Efficiency	22%
MDA	205dpm	MDA	205dpm	MDA	745dpm

Survey Type: Contamination

Building: 750 PAD

Location: Tent #5

Purpose: Release

RWP #: N/A

Date: 6/29/05 Time: 10:09

RCT: S. Jakubowski / [signature] [redacted]

Print name / Signature

RCT: N / A /

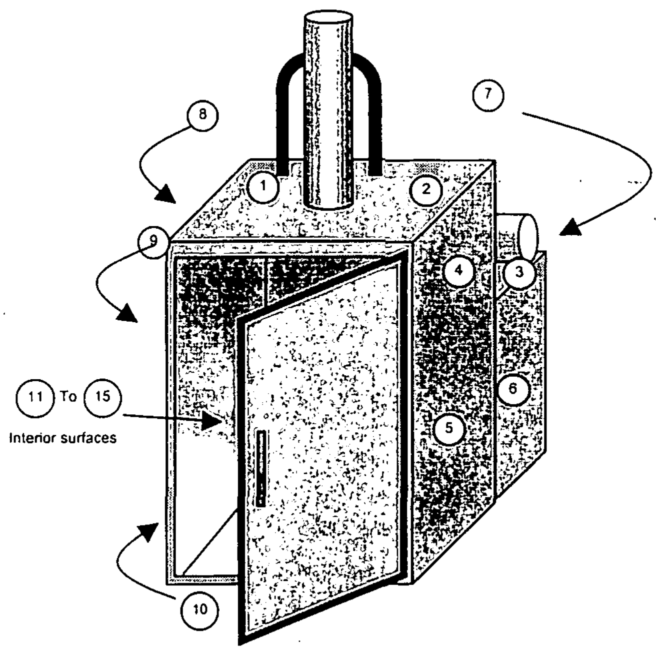
Print name / Signature / Emp. #

PRN/REN # :

Comments: Only accesible surfaces were surveyed.

Swipe Loc#	Location/Description Results in dpm/100cm²	Removable α	Removable β	Total α	Total β
1	Exterior Surfaces	<18	<205	<94	<745
2	↓	<18	<205	<94	<745
3	↓	<18	<205	<94	<745
4	↓	<18	<205	<94	<745
5	↓	<18	<205	<94	<745
6	↓	<18	<205	<94	<745
7	↓	<18	<205	<94	<745
8	↓	<18	<205	<94	<745
9	↓	<18	<205	<94	<745
10	Exterior Surfaces	<18	<205	<94	<745
11	Interior Surfaces	<18	<205	<94	<745
12	↓	<18	<205	<94	<745
13	↓	<18	<205	<94	<745
14	↓	<18	<205	<94	<745
15	Interior Surfaces	<18	<205	<94	<745

DRUM Compactor SN# 10214



Date Reviewed: 6/3/05 S. Mahrt / [signature] / [redacted]

Print Name / Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	767	Serial #	1369	Serial #	N/A
Cal Due	8/3/05	Cal Due	9/10/05	Cal Due	
Bkg	0.1 cpm a	Bkg	2.7 cpm a	Bkg	cpm
Eff.	33 ~~0.33~~ %	Eff.	21.6 %	Eff.	%
MDA	10 dpm a	MDA	48 dpmα	MDA	dpm

Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	N/A	Serial #	N/A	Serial #	N/A
Cal Due		Cal Due		Cal Due	
Bkg	cpm a	Bkg	cpm	Bkg	cpm
Eff.	%	Eff.	%	Eff.	%
MDA	dpm a	MDA	dpm	MDA	dpm

Survey type: Contamination Alpha
Building: Tent 5
Location: 750 Pad
Purpose: Survey of asphalt inside Tent 5

RWP #: N/A

Date: 6/28/05 Time: 1600

RCT: A.B. Vigil / / [redacted]
Print name Signature Emp. #

RCT: / /
Print name Signature Emp. #

RCT: / /
Print name Signature Emp. #

PRN/REN # :

Comments: Nuclide of concern is Plutonium. Floor area around each point was scanned in a 2m x2m area. Stained areas of the floor and indicated areas near the edge of the tent were also scanned. No contamination above release limits was detected.

SURVEY RESULTS

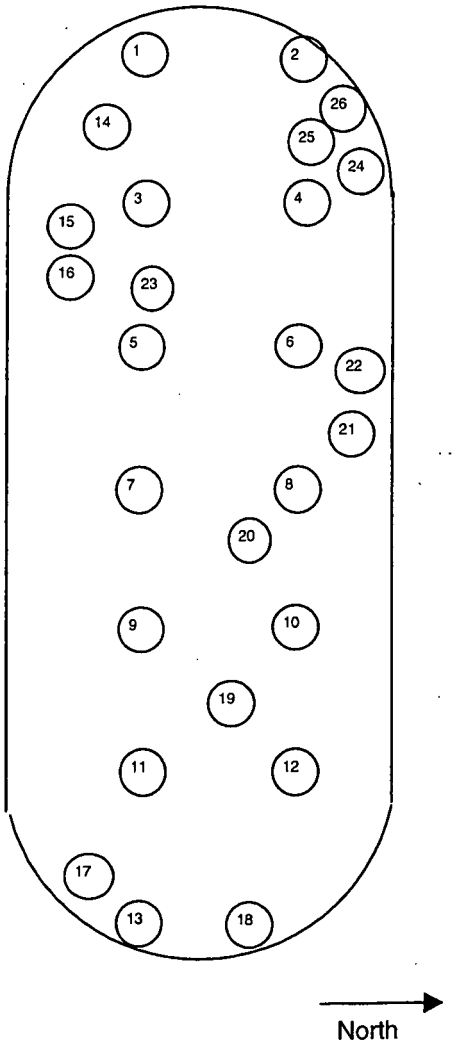
Swipe #	LOCATION/DESCRIPTION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1-13	Floor grid locations	< 10	<48	N/A	N/A	N/A	N/A
14-26	Floor stain locations	< 10	<48	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 7/1/05 **RS Supervision:** S Mau… / / [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

Tent 5 Asphalt



ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

INSTRUMENT DATA

Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	835	Serial #	665	Serial #	3552
Cal Due	12/8/05	Cal Due	12/2/05	Cal Due	12/2/05
Bkg	0.1 cpm a	Bkg	6.7 cpm a	Bkg	5.3 cpm
Eff.	33 %	Eff.	20.3 %	Eff.	20.4 %
MDA	10 dpm a	MDA	48 dpmα	MDA	48 dpm

Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	N/A	Serial #	N/A	Serial #	N/A
Cal Due		Cal Due		Cal Due	
Bkg	cpm a	Bkg	cpm	Bkg	cpm
Eff.	%	Eff.	%	Eff.	%
MDA	dpm a	MDA	dpm	MDA	dpm

Survey type: Contamination Alpha
Building: Tent 5
Location: 750 Pad
Purpose: Tent 5 steel support beams

RWP #: N/A

Date: 7/8/05 Time: 1600

RCT: S. Jablkowski / S. Jablkowski / [redacted]
Print name Signature

RCT: D. Buchanan / D. Buchanan [redacted]
Print name Signature Emp. #

RCT: / /
Print name Signature Emp. #

PRN/REN # :

Comments: Nuclide of concern is Plutonium. 1 meter of the steel support above and below each survey point was scanned. No contamination above release limits was detected.

SURVEY RESULTS

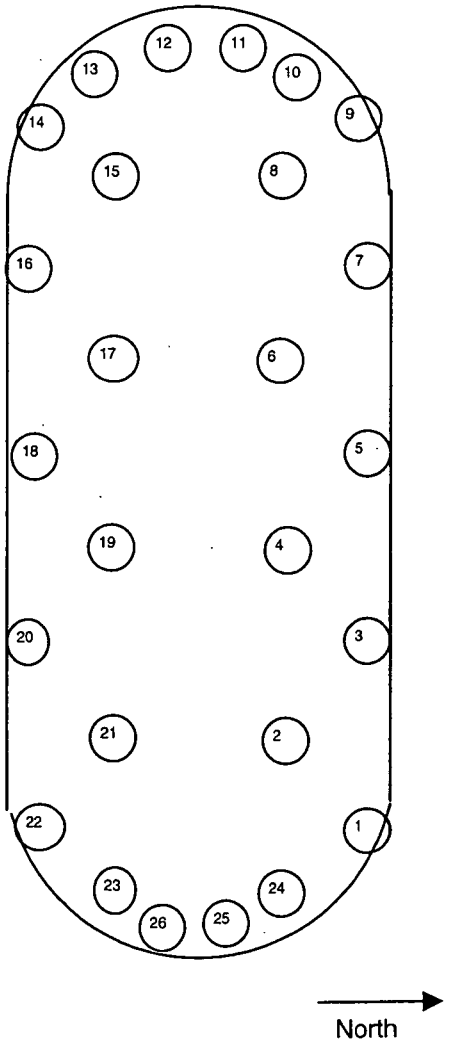
Swipe #	LOCATION/DESCRIPTION	ALPHA Swipe dpm/100cm2	ALPHA Direct dpm/100cm2	ALPHA Wipe dpm/wipe	BETA Swipe dpm/100cm2	BETA Direct dpm/100cm2	BETA Wipe dpm/wipe
1	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
2	See attached map - steel support	< 10	63.4	N/A	N/A	N/A	N/A
3-5	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
6	See attached map - steel support	< 10	66.9	N/A	N/A	N/A	N/A
7-8	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
9	See attached map - steel support	< 10	60	N/A	N/A	N/A	N/A
10	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
11	See attached map - steel support	< 10	60	N/A	N/A	N/A	N/A
12	See attached map - steel support	< 10	81.6	N/A	N/A	N/A	N/A
13-15	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
16	See attached map - steel support	< 10	60	N/A	N/A	N/A	N/A
17	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
18	See attached map - steel support	< 10	63.4	N/A	N/A	N/A	N/A
19	See attached map - steel support	< 10	<48	N/A	N/A	N/A	N/A
20	See attached map - steel support	N/A	57	N/A	N/A	N/A	N/A
21	See attached map - steel support	N/A	<48	N/A	N/A	N/A	N/A
22	See attached map - steel support	N/A	89.5	N/A	N/A	N/A	N/A
23	See attached map - steel support	N/A	<48	N/A	N/A	N/A	N/A
24	See attached map - steel support	N/A	86.6	N/A	N/A	N/A	N/A
25-26	See attached map - steel support	N/A	<48	N/A	N/A	N/A	N/A

Date Reviewed: 7/11/05 **RS Supervision:** S. Murph / [signature] / [redacted]
Print Name Signature

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

Drawing Showing Survey Points

Tent 5 Steel Support Beams
(Exterior)



INSTRUMENT DATA

Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	1130	Serial #	665	Serial #	1369
Cal Due	7/3/05	Cal Due	12/2/05	Cal Due	9/10/05
Bkg	0.4 cpm a	Bkg	2.0 cpm a	Bkg	1.3 cpm
Eff.	33 %	Eff.	20.3 %	Eff.	22.3 %
MDA	10 dpm a	MDA	48 dpmα	MDA	48 dpm
Mfg.	Eberline	Mfg.	NE Electra	Mfg.	NE Electra
Model	SAC-4	Model	DP-6	Model	DP-6
Serial #	N/A	Serial #	N/A	Serial #	N/A
Cal Due		Cal Due		Cal Due	
Bkg	cpm a	Bkg	cpm	Bkg	cpm
Eff.	%	Eff.	%	Eff.	%
MDA	dpm a	MDA	dpm	MDA	dpm

Survey type: Contamination Alpha

Building: Tent 5

Location: 750 Pad

Purpose: Tent 5 interior and exterior panels

RWP #: N/A

Date: 6/28/05 Time: 1600

RCT: S. Jablkowski / S. Jablkowski / [redacted]

Print name Signature

RCT: A. Vigil / A. Vigil / [redacted]

Print name Signature Emp. #

RCT: / /

Print name Signature Emp. #

PRN/REN # :

Comments: Nuclide of concern is Plutonium. Fixed contamination above the release limits was detected at locations 5, 10, 11, 12, 16 and 18. No loose contamination was detected. The contaminated samples were analyzed and the isotope was determined to be plutonium. An additional scan 1 m2 scan survey was performed around each interior overhead location.

SURVEY RESULTS

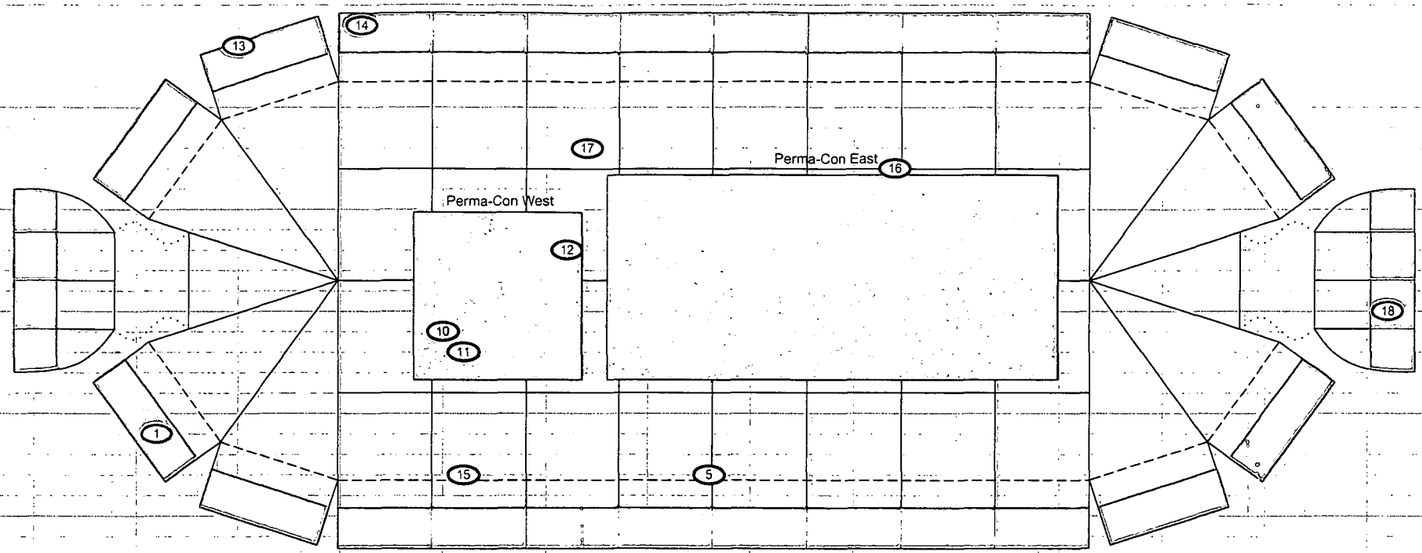
Swipe #	LOCATION/DESCRIPTION	ALPHA Swipe	ALPHA Direct	ALPHA Wipe	BETA Swipe	BETA Direct	BETA Wipe
		dpm/100cm2	dpm/100cm2	dpm/wipe	dpm/100cm2	dpm/100cm2	dpm/wipe
1-4	See attached map	< 10	<48	N/A	N/A	N/A	N/A
5	See attached map	< 10	158	N/A	N/A	N/A	N/A
6-9	See attached map	< 10	<48	N/A	N/A	N/A	N/A
10	See attached map	< 10	176	N/A	N/A	N/A	N/A
11	See attached map	< 10	118	N/A	N/A	N/A	N/A
12	See attached map	< 10	133	N/A	N/A	N/A	N/A
13-15	See attached map	< 10	<48	N/A	N/A	N/A	N/A
16	See attached map	< 10	123	N/A	N/A	N/A	N/A
17	See attached map	< 10	52	N/A	N/A	N/A	N/A
18	See attached map	< 10	183	N/A	N/A	N/A	N/A
19-27	See attached map	< 10	<48	N/A	N/A	N/A	N/A
28	See attached map - inside supply duct	< 10	<48	N/A	N/A	N/A	N/A
29-30	See attached map - inside permacon exhaust duct	< 10	<48	N/A	N/A	N/A	N/A
31-32	See attached map - inside tent exhaust vent	< 10	<48	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Date Reviewed: 7/1/05 **RS Supervision:** S. Ashford / [signature] / [redacted]

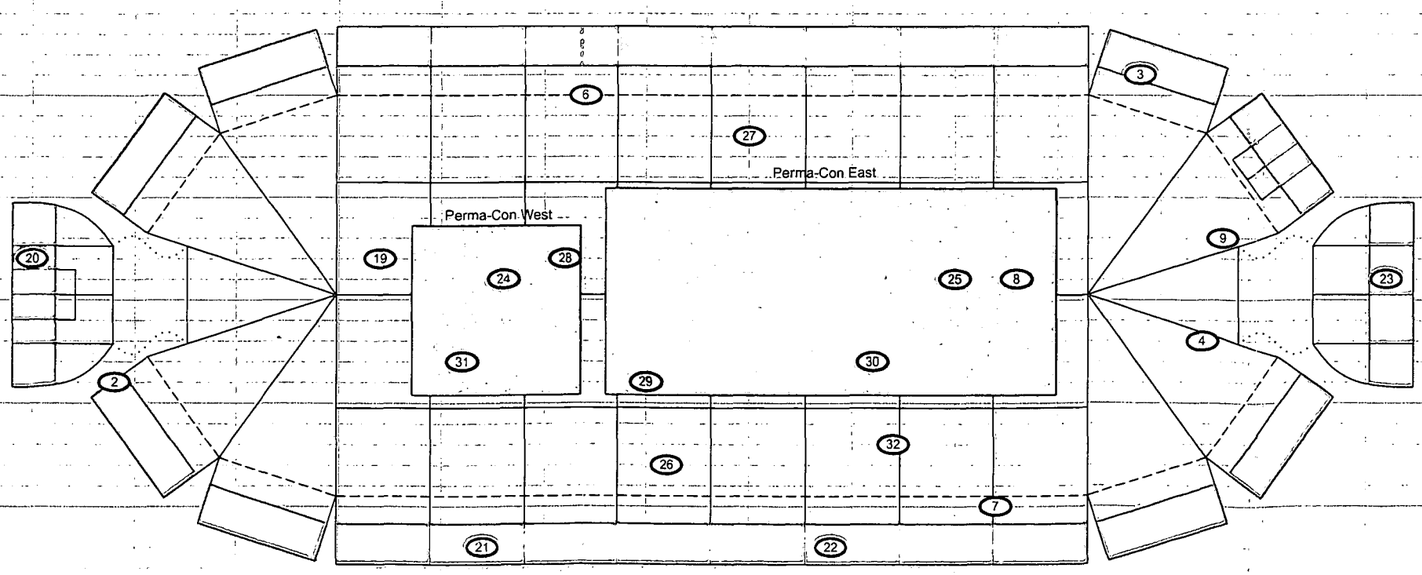
Print Name Signature

N

750 Pad ~ Tent 05 Exterior (Flattened)



750 Pad ~ Tent 05 Interior (Inverted)



SURVEY MAP LEGEND

(#) Smear & TSA Location

Scan Area

0 FEET 30

0 METERS 10

1 inch = 24 feet 1 grid sq. = 1 sq. m.

MAP ID: 03-JS\A5G13\Tent05_SurOnly, June 16, 2005

ATTACHMENT D

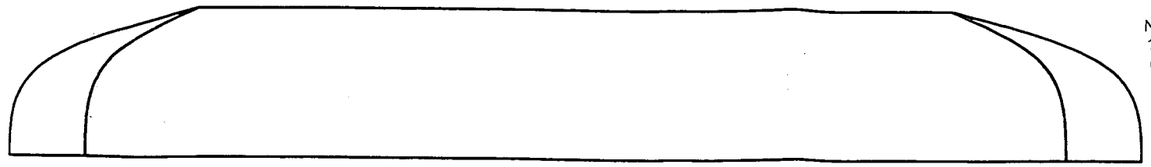
Chemical Data Summaries And Sample Maps

Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ($\mu g/100\ cm^2$)
Tent 5 - RIN 05B0128				
750-06232005-214-001	1	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-002	2	Main	Floor - random	< 0.1
750-06232005-214-003	3	Main	Floor - random	< 0.1
750-06232005-214-004	4	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-005	5	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-006	6	Main	Floor - random	< 0.1
750-06232005-214-007	7	Main	Floor - random	< 0.1
750-06232005-214-008	8	Main	Floor - random	< 0.1
750-06232005-214-009	9	Main	Floor - random	< 0.1
750-06232005-214-010	10	Main	Overhead heating unit - random	< 0.1
750-06232005-214-011	11	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-012	12	Main	Floor - random	< 0.1
750-06232005-214-013	13	Main	Floor - random	< 0.1
750-06232005-214-014	14	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-015	15	Main	Floor - random	< 0.1
750-06232005-214-016	16	Main	Overhead heating unit - random	< 0.1
750-06232005-214-017	17	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-018	18	Main	Floor - random	< 0.1
750-06232005-214-019	19	Main	Overhead round duct - random	< 0.1
750-06232005-214-020	20	Main	Floor - random	< 0.1
750-06232005-214-021	21	Main	Floor - random	< 0.1
750-06232005-214-022	22	Main	Overhead West permacon - random	< 0.1
750-06232005-214-023	23	Main	Overhead HVAC Duct - random	< 0.1
750-06232005-214-024	24	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-025	25	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-026	26	Main	Floor - random	< 0.1
750-06232005-214-027	27	Main	Floor - random	< 0.1
750-06232005-214-028	28	Main	Floor, West permacon - random	< 0.1
750-06232005-214-029	29	Main	Floor, West permacon - random	< 0.1
750-06232005-214-030	30	Main	Overhead conduit - random	< 0.1
750-06232005-214-031	31	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-032	32	Main	Floor - random	< 0.1
750-06232005-214-033	33	Main	Overhead, East Permacon - random	< 0.1
750-06232005-214-034	34	Main	Floor - random	< 0.1
750-06232005-214-035	35	Main	Overhead heating unit - random	< 0.1
750-06232005-214-036	36	Main	Overhead heating unit - random	< 0.1
750-06232005-214-037	37	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-038	38	Main	Overhead heating unit - random	< 0.1
750-06232005-214-039	39	Main	Floor - random	< 0.1
750-06232005-214-040	40	Main	Floor, East Permacon - random	< 0.1
750-06232005-214-041	41	Main	Top of drum crusher, West Permacon - biased	< 0.1
750-06232005-214-042	42	Main	Floor, West Permacon - biased	< 0.1
750-06232005-214-043	43	Main	Overhead conduit, West permacon - biased	< 0.1

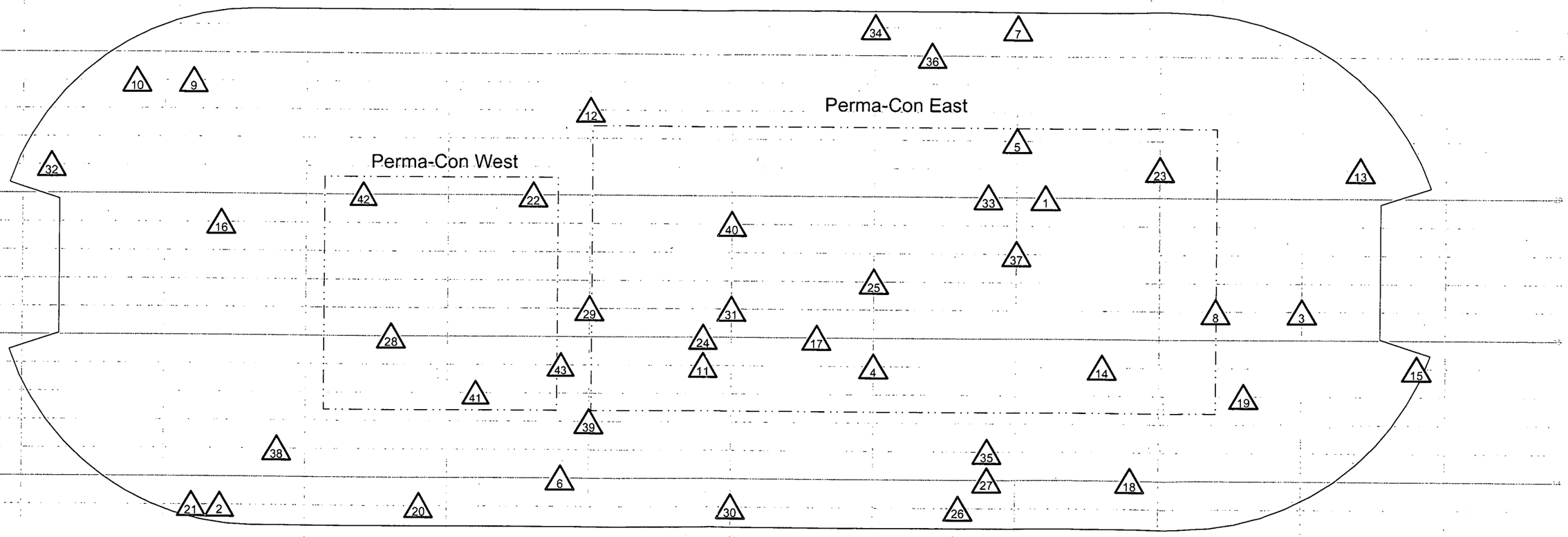
CHEMICAL SAMPLE MAP

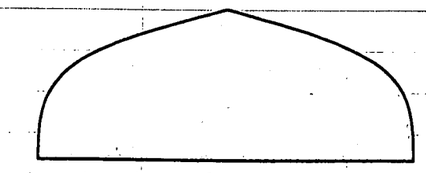
Building: Tent 05
Beryllium



North/South Profile
1/2 Drawing Scale
(Reference View)

Tent 5 Floor





East/West Profile
1/2 Drawing Scale
(Reference View)

SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location
- Open/Inaccessible Area
- Area Shown in Another View

N

0 FEET 18
0 METERS 6

1 inch = 12 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy
Rocky Flats Environmental Technology Site

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ATTACHMENT E

Data Quality Assessment (DQA) Detail

DATA QUALITY ASSESSMENT (DQA)

VERIFICATION & VALIDATION (V&V) OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed. The radiological survey assessment is provided in Table E-1 and beryllium in Table E-2. A data completeness summary for all results is given in Table E-3.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project File. The report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Tent 5 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. Transuranic isotope activity and Uranium and/or other naturally occurring isotope activity were evaluated against, and were less than the Transuranic $DCGL_w$ (100 $dpm/100cm^2$) unrestricted release limits for the tent structural support steel, drum crusher and permacons. Transuranic isotope activity was evaluated against, and was greater than the Transuranic $DCGL_w$ (100 $dpm/100cm^2$) unrestricted release limits on the exterior tent fabric.

Consistent with EPA's G-4 DQO process, the radiological survey design for each survey unit performed per PDS requirements was optimized by checking actual measurement results acquired during pre-demolition surveys against the model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired. The radiological survey Data Quality Objectives (DQOs) for the asphalt pad, drum crusher, and structural support steel were satisfied per Radiological Safety Practice procedures 3-PRO-165-07.02, *Contamination Monitoring Requirements*. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures and under the permacons will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record DAP-035, dated 6/20/05). Since the permacons had sealed metal floor surfaces, the underside of the metal floor surface and the asphalt pad underneath the metal floor were not accessible for RLC/PDS characterization. Therefore, further characterization of these inaccessible surfaces will be performed during and after demolition of the tent and permacon structures. The drum crushing equipment inside Tent 5 met the RSP 7.02 MDA requirements and is less than the unrestricted release criteria for sanitary equipment disposal. The drum crusher will be managed as sanitary waste during demolition.

Rev 1.

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DQA SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties, except the exterior tent fabric.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable DCGL unrestricted release levels, except the exterior surfaces of the tent fabric which will be managed as LLW. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable RSPs, survey units were properly designed and bounded, and instrument performance and calibration was verified as acceptable thereby ensuring data accuracy criteria.

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of further contamination into the facility. On this basis RLC/PDS, Tent 5 is ready for demolition and the waste managed appropriately.

Table E-1 V&V of Radiological Results - Tent 5

V&V CRITERIA, RADIOLGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)		
QUALITY REQUIREMENTS				
	Parameters	**Measure**	**Frequency**	**COMMENTS**
ACCURACY	Initial calibrations	90%<x<110%	≥1	Multi-point calibration through the measurement range encountered in the field; programmatic records.
	Daily source checks	80%<x<120%	≥1/day	Performed daily/within range.
	Local area background: Field	typically < 10 dpm	≥1/day	All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)
PRECISION	Field duplicate measurements for TSA	≥5% of real survey points	≥10% of reals	N/A
REPRESENTATIVENESS	MARSSIM methodology: Survey Unit 750PIN (permacon interior) and 750PIX (permacon exterior).	statistical and biased	NA	Random w/ statistical confidence.
	Survey Maps	NA	NA	Random and biased measurement locations controlled/mapped to ±1m.
	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA	Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Units of measure	dpm/100cm^2	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual surveys Usable results vs. unusable	>95% >95%	NA	See Table E-3 for details.
SENSITIVITY	Detection limits	TSA: ≤50 dpm/100cm^2 RA: ≤10 dpm/100cm^2	all measures	MDAs ≤ 50% $DCGL_w$ Note: The RSP waste characterization surveys of the asphalt pad and structural support steel met the MDA requirements for waste packaging and PDSP requirements. The drum crushing equipment inside Tent 5 met the RSP 7.02 MDA requirements and is less than the unrestricted release criteria for sanitary equipment disposal.

Table E-2 V&V of Beryllium Results - Tent 5

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Littleton, Co.	
		RIN ---->	RIN05B0128	
QUALITY	REQUIREMENTS	Measure	Frequency	COMMENTS
ACCURACY	Calibrations Initial	linear calibration	≥1	All results were below associated action levels.
	Continuing	80%<%R<120%	≥1	
	LCS/MS	80%<%R<120%	≥1	
	Blanks – lab & field	<MDL	≥1	
	Interference check std (ICP)	NA	NA	
PRECISION	LCSD	80%<%R<120% (RPD<20%)	≥1	
	Field duplicate	all results < RL	≥1	
REPRESENTATIVENESS	COC	Qualitative	NA	
	Hold times/preservation	Qualitative	NA	
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	
COMPARABILITY	Measurement units	ug/100cm^2	NA	
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	>95% >95%	NA	
SENSITIVITY	Detection limits	MDL of 0.00084 ug/100cm^2	all measures	

Table E-3 Data Completeness Summary - Tent 5

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Beryllium	Tent 5 (interior and exterior)	43 samples (40 random/3 biased)	43 samples (40 random/3 biased)	No contamination found at any location	10CFR850; OSHA ID-125G No results above the action level (0.2 ug/100cm^2) or investigative level (0.1 ug/100cm^2.)
Radiological	Survey Area 5 Survey Class 1 Survey Unit: 750PIN Tent 5 East and West Permacons (interior)	44 α TSA (systematic) 44 α Smears (systematic) 3 QC TSA 100% scan of the all interior surfaces	44 α TSA (systematic) 44 α Smears (systematic) 3 QC TSA 100% scan of the all interior surfaces	No contamination at any location; all values below unrestricted release levels	Transuranic DCGLs used.
Radiological	Survey Area 5 Survey Class 3 Survey Unit: 750PEX Tent 5 East and West Permacons (exterior)	20 α TSA (15 random/5 biased) 20 α Smears (15 random/5 biased) 2 QC TSA 10% scan of the all interior and exterior surfaces	20 α TSA (15 random/5 biased) 20 α Smears (15 random/5 biased) 2 QC TSA 10% scan of the all interior and exterior surfaces	No contamination at any location; all values below unrestricted release levels	Transuranic DCGLs used.
Radiological	Tent 5 – Structural Support Steel RSP 7.02 WRE Surveys	26 α TSA 26 α Smears 2 m scan at each TSA/RSA location	26 α TSA 26 α Smears 2 m scan at each TSA/RSA location	No contamination at any location; all values below unrestricted release levels	Transuranic DCGLs used.

Table E-3 Data Completeness Summary - Tent 5

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Radiological	Tent 5 – Fabric (Interior and Exterior) RSP 7.02 WRE Surveys	32 α TSA 32 α Smears 100% scan 2 meters and below, and 1 m^2 scan at each interior TSA/RSA location	32 α TSA 32 α Smears 100% scan 2 meters and below, and 1 m^2 scan at each interior TSA/RSA location	Contamination found above unrestricted release levels	Transuranic DCGLs used.
Radiological	Tent 5 – Drum Crusher RSP 7.02 WRE Surveys	15 α TSA 15 α Smears	14 α TSA 14 α Smears	No contamination at any location; all values below unrestricted equipment release levels	Transuranic DCGLs used. The drum crushing equipment inside Tent 5 met the RSP 7.02 MDA requirements and is less than the unrestricted release criteria for sanitary equipment disposal. The drum crusher will be managed as sanitary waste during demolition.
Radiological	Tent 5 Asphalt Pad RSP 7.02 WRE Surveys	26 α TSA 26 α Smears 2 m^2 scan at each TSA/RSA location, plus biased scanning on stains and at tent edges	26 α TSA 26 α Smears 2 m^2 scan at each TSA/RSA location, plus biased scanning on stains and at tent edges	No contamination at any location; all values below unrestricted release levels	Transuranic DCGLs used. Additional RSP 7.02 surveys of the asphalt pad areas outside the Tent structures will be performed after tent demolition is complete for waste disposal determinations (refer to RFCA Contact Record DAP-035, dated 6/20/05).